Notebook Series -- Notebooks by Edison
Notebook, N-17-00-00.4

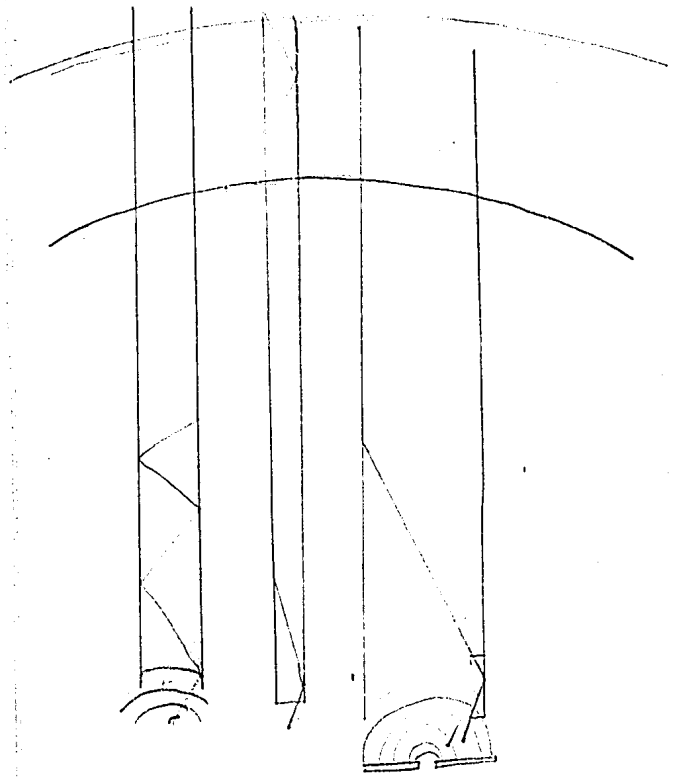
This undated notebook was used by Edison, probably during 1917. The entries pertain to a variety of subjects. Some of the notes relate to chemical products, byproducts, and reactions. One entry is entitled "Anilin"; another, "Carbolic Acid (Shale Salt)." In addition, there are speculative notes regarding submarine warfare. These suggest methods of observing and disabling the periscopes of the enemy, deflecting torpedoes, and detecting the sounds of enemy submarines underwater. On the last page are speculations involving the role of the "ether." Some of the notes were taken from published sources, including *King's American Dispensatory*. The cover is marked "Aniline Phenol War." The pages are unnumbered. Approximately 30 pages have been used.

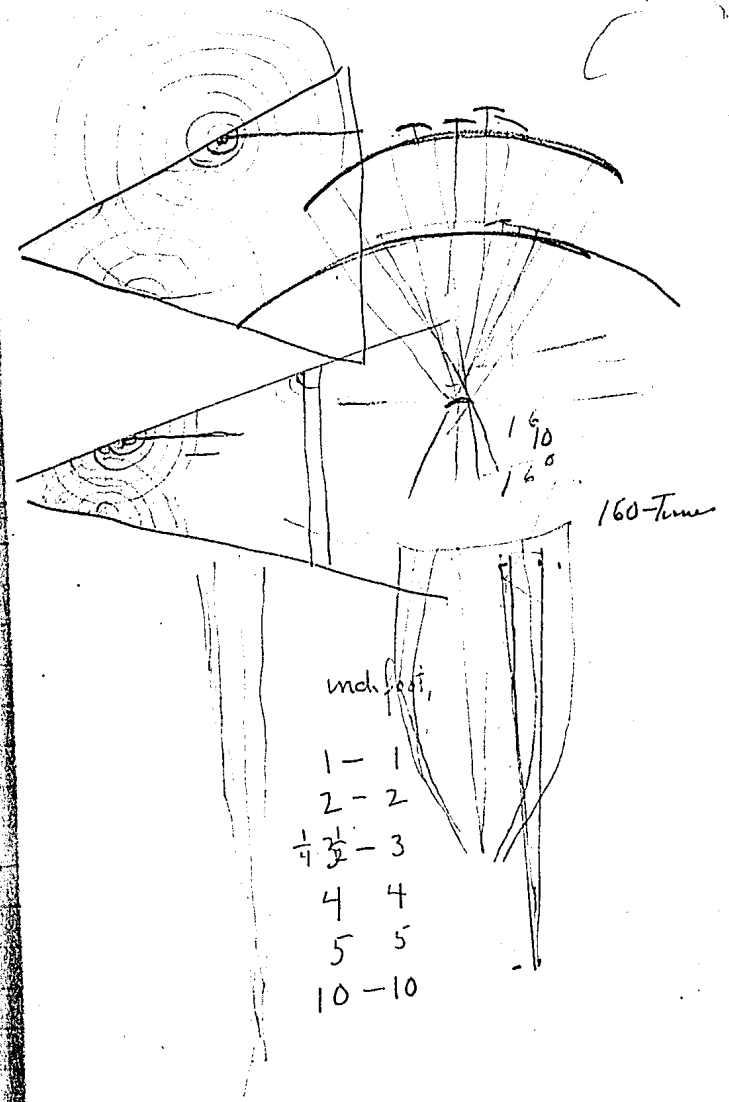
Anilin

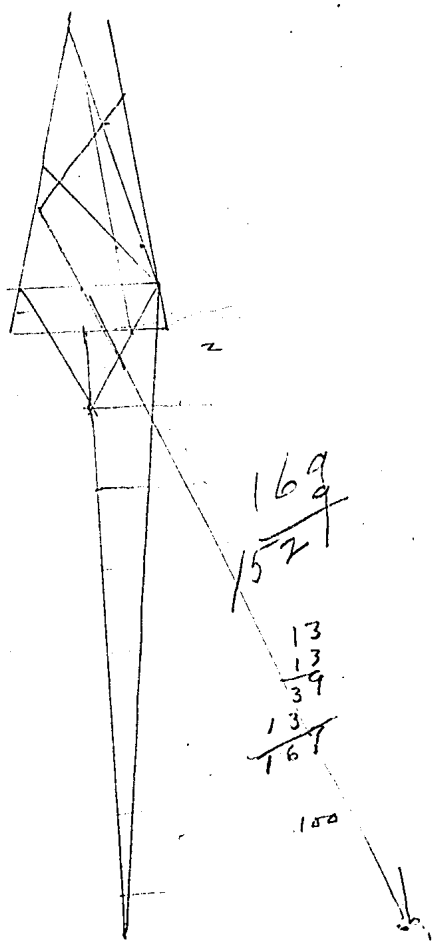
Amount of iron in waste acid from mixture steel nitrating pots which produces 1500 lbs per run.

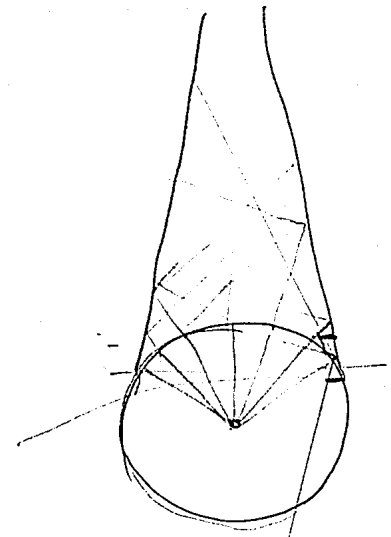
One gallon contains 2.67 grams
250 gals of charge contains 667 grms metallic iron.

Waste acids put in gallon bottle, required 4 days to settle the white sediment so its depth at bottom was 1/2 inch.

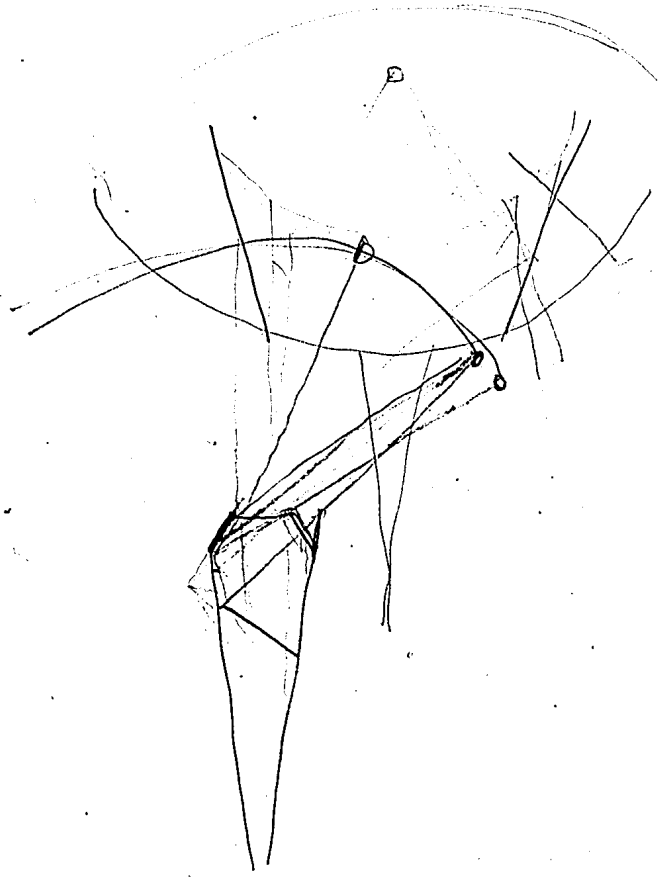


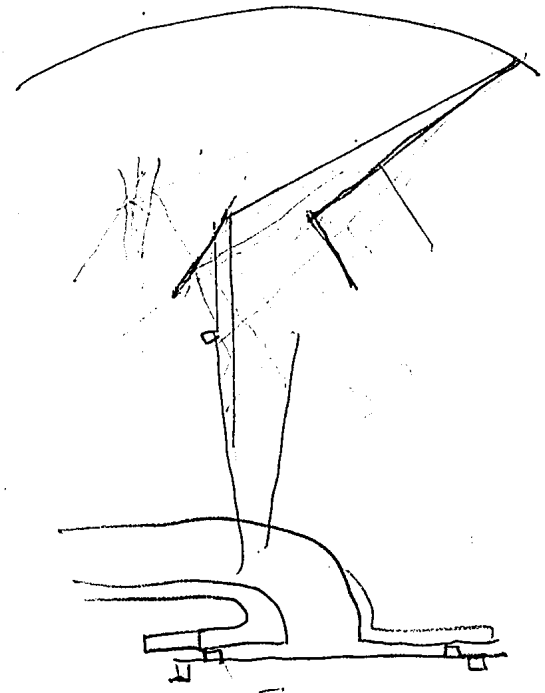

160-Turns
inch feet,
1 - 1
2 - 2
$\frac{1}{4}$ $\frac{1}{2}$ - 3
4 4
5 5
10 - 10





It looks as if 1/4 end of 10 or 12 inch face of ~~12 to 13~~ 10 ft long at 15 ft from source of waves would be clear — The loss by receeding at square of distance 169 whereas Multiplication 1/4 to 10" face is 1600 assuming Multiplication perfect, could run





Rubber Rubber
Ingtion

Notes

Dry plates are more sensitive the higher the temperature —

Cyanin Blue is a dye rapidly bleaches in yellow light

Cyanin — Dicyanin,

Mixtures of Malachite green & Naphthalene blue sensitizes the red

Cerulin S sensitizes Red

Cyanin plates if kept long fog

Alizarin blue S. for infra

see Abney page 471

Panachrome

A large wave compared of sound waves 150 000 per second of frequency 60 ~ formed on a mirror lamp blackened should deflect it as the condensation would push + there would be no rarefaction.

The sound be secondary

The greater the ~~[illegible]~~ light effect the more effect on the light source but actually all light sources in ordinary low light effect their radiation lying chiefly in the Infra Red

Paper soaked in a solution of
1 gram of Paraphenylenediamin
in 5 cc of dilute Nitric acid
(2 cc acid SG 1.2 to 3 cc Water)
dried rapidly in Bunsen flame
paper becomes blue on exposure
to Ultra Violet light
(rays from ordinary filaments
do not affect it)

Heraeus Quartz Hg
Lamp (fused) most powerful
of all for Ultra Vio

Cadmium Electrodes in
Spark gap next best

Look out rays don't
Strike Eye or Skin

Water which is transparent to the Visible rays up to 200 μμ has a strong absorption for the long waves of the Infra red

Only light that is absorbed in a certain substance is active in producing Chemical Change

Signal by key & absorbing solution put on & off a light & observe with a spectroscope then glass & light - so not to change the light

In absorption, the more complicated the molecule the more the absorption shifts towards the red

Anthracene is converted by light into Dianthracene

solution becomes colorless

in the dark the Dianthracene reverts spontaneously to anthracene in fact light polymerizes anthracene or darkens late it depolymerizes

Could possibly make an instrument based on this

All selectively absorbing bodies are light sensitive

Adsorption

Adsorption theory of color / Vio

selenium better

Aromatic Fulgides

for instance Triphenyl fulgide

powders from Orange-red or yellow
Crystals to dark brown in place
of sunlight & are recoverable
yellow in dark - heat enormously
assists in returning

Uranium Salts Exceedingly
Sensitive to light

Tungsten Sensitive

Chromium salts photo Sensitive

Molybdenum salts

T2 - nearly all form
light sensitive - up to long
heat rays -

S2 - sensitive to heat rays + light

S sensitive to radiant heat

Luminosity of Certain Phosphors are diminished & even quenched by infra red

Cl & Br if got free of O is Extraordinarily Sensitive to light, Higher the purification to get rid of Ox the more sensitive, Shepland Photo Chem 290

Mercuric Chl & ammonium Oxalate in Sol, the Hg is reduced to Mercurous Chloride - addition of Cl increases the sensitiveness also from

Light accumulation
Calorie Lemon Radiation

Chlorine or Carbon Monoxide
forms Phosgene by Light

Mixed gas in enclosed space
with Diaphanogen or Mirror
light changes the pressure

Marked Effect of Halogens
on aromatic Compounds with
side chains by light
if weak light used one compound
formed bright light another no
light connection.
The whole series of
alkyl-benzene hydrocarbons
act thus.

Radiant heat may increase or decrease function of a retaining surface & we can get a definite theory

Double Iodides of Mercury & Alkali very sensitive to radiant heat which can be used to map out lines

Isomeria Keto Enolens of high Molecular weight

Piperonylidine Acetone
Ortho or para Benzylidene
di-oxy p benzoins
see Ann Chem 1910
374 - 237 - Slabbert & Wacker

The bleaching out of dyes by light depends upon the other ingredients for instance fluorescein dont bleach out to a leuco body in presence of H_2O_2 but did in a mixt of KOH & NH_4OH.

Extensive investigation on light bleaching of Dyes by Ebbinghaus

Über die Einwirkung des Lichtes auf ~~Farben~~ Farben

also - Ozazones & hydrazones for instance Benzaldehyde phenyl hydrazone

Light changes a gas & makes it combust — use Mercury gas - Mabogh on Celluloid ~~use~~

Photo plate illuminated with phosphorescent light weak & distant objects photographed by infra red image on plate Quenching Effect of phosphorescent light - see Stephens 404-5 for exact number of phosphors see Wied Annalen 1889 38 90

unbleaching by light
(Dyes) O_2 is used up
+ fixed
water or water vapor
favorable reaction
impurities, particularly
Certain Electrolytes
influence the process

Quinone reduced by
light to Quinhydrone
+ ultimately to dihydroxybenzene

Submarines – Drag bags all ships
Oil with lampblack – gives dull
Coating periscopes of hostile
Submarines – Ordinary Palmanni paint for
night work

Detecting submarines Ferrenden
Oscillator with angle downward
detector for direction – + Echo –
Think special sound waves
necessary accumulative reception
apparatus — with 2
least Cum triangulate —
get direction also of
moving –

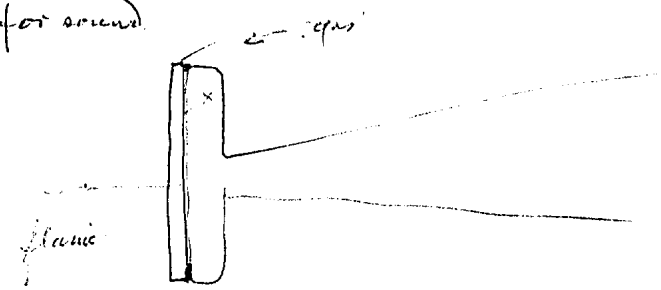
Observers in closed smallchamber
on deck – must head 2 men
all light but narrow ranges
Cut off from Eyes – sweep
around the horizon with the
Narrow View Chamber black
men relieve each other every
few minutes – perhaps
Bellerdown.

find out how deep the torpedo goes below surface when shot at a steamer. Seems as if it could be hit with a large bullet Maxim gun I mean steel bullet if not much below surface especially if set Must need -

If wooden vessels are respected by metals, it would seem with proper vessels a application ~~very~~ different from any now used presence of so large a surface of metal as a ship should give echo several miles away

How sensitive is a selenium cell in Vacuo The current of which is varied to be intermitted so make audible sounds in a telephone -
+ Reflector Condensing light waves on the cell - It is probable it includes sensitive thermo or bolometer or thermopile -

I wonder how sensitive a cell would be for sound



also flame might play over the surface of graphitized lock oil stone to vary its Resistance,

If Acetylene gas used Coated photo

If wireless receiver ~~was~~ trace a diagram of metal onto fresh tile Connect the collector to antenna

I think there is a good field for something new for light or other waves depending the friction of a film on a glass disc over which passes a friction Watch pen & Dictaphone to make it audible

Carbolic Acid (Phalt Salt)

Single Na in Benzinesulfonate Soda

58.5 NaCl turns 158 lbs Benzinesulfonic Acid into the Soda Salt. ?

Kings proportions
480 Gals water
1080 pounds salt
260 gals sulfonated Liquor

Sulphonation

275 gallons Benzol.
30 gals 98% H_2SO_4
213 gals 20% Oleum

King says -

If 200 gals of Sulphonated Liquor is used then not less than 400 gals of water containing 900 lbs NaCl should be used

He suggests 500 Gals water + 1150 lbs Salt be used at first + if found OK then 400 gals water + 900 lbs salt.

He says he does not think it possible to go below this limit

They always used 2 Volumes of Salting Liquor to 1 Volume of Sulfonated Liquor

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100 gals water saturated with NaCl increases in bulk 9.15%

3600 / 62.50 = 600 / 20 = 30 / 2.16 = 2.5 / 2

Benzenesulfonate Soda
87% acid
12.7 Na –

Pure Benzenesulfonate Soda contains
62.5% of Phenol.

Exposed to air + Centrifuge liquor
for 3 days

Copper	1" sqr	lost	609 milgrams
Nickel	"	65	"
Brass	"	90	"

The pieces were 1/32 thick Exposing
2 sqr inches of surface —

Navy

There must be a very noticeable difference between a submarine propeller working deep in water & one on or near the surface with proper appreciation this could be detected 2 or 3 miles away & the direction found

Also the jar of the whole cigar shaped body will give waves of high frequency compared to the screw. It seems to me this is a tremendous something to go on

It would perhaps be necessary to break up the waves of the propeller or screw into highly audible waves by a revolving shutter,

Possibly an accumulating device could be introduced ~~for~~

We should make an very sensitive recording phone 500 to 800 grooves to the inch - tracked light on light speaker ~~[illegible]~~

After removing alcohol & other solvents all that will come out from Oxygen respirator the remainder will be of uniform as the Bitumen most sensitive to light = Probably that this alteration by light would change the friction & afford a reproduction by friction reproducer & Diaphram & Sound recorded on way to reproduce original picture

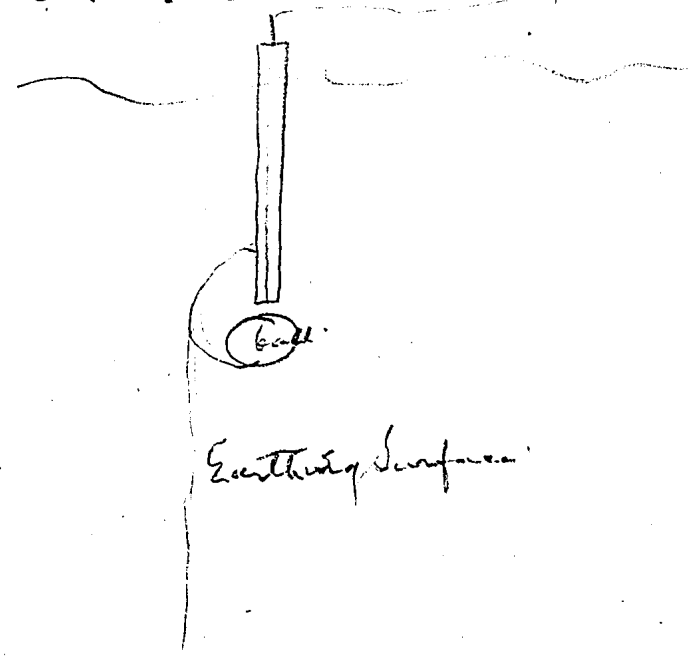
25000 | 4,500,000
25000

Same with Italian

A fast Motor boat with shield
the whole K forward from ship
One on each side could be
sent out to intercept the
Torpedo —

A strip of the Sea 50 miles
wide 100 miles long with
an oil film (black) $\frac{1}{40}$ of 1000 thick
requires
1450 gals to Mile — 5000 Sq. Miles
2,250,000 gals
50000 66's, 3" $150,000
This amt, much of my figures
are OK — If Aluminum paint
necessary weight cost
$8000 to $150,000 more

Think sound waves with Excessively sharp fronts in water can be made by condenser discharges 80 to second or more using armored electrodes -



It is possible that the undulations of the form of sound waves might partly go in the Ether as well as by air or disturbances of Atmospheric pressure or detectable by some kind of apparatus?

5240
50
26200
50

262 000 - feet wide -

524 000 long

5700 -
8
45.600
1000 bbls -
25

524000
262
104500
44000
31400
104800
137

137 million feet

24000 to 1 cubic ft

24000) 137 000 000 (5708
120 000
17000000
16800000
200000

5240
5240
20960
2480
26200
27480

27 000 000

12000
40
480000

480 000 to a foot -

480 000) 27 000 000 (56
24 000 000
3 000 000
2 880 000
8
48